TYPE APPROVAL CERTIFICATE

Certificate no.:
TAP00000D4
Revision No:
6

This is to certify:

that the Flowmeter

with type designation(s)
OMG

issued to
KRAL GmbH
Lustenau, Vorarlberg, Austria

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems

Application:

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Temperature range:	**-20° to 200°C**
Max. working press.:	**250 bar**
Sizes:	**OMG-013; OMG-020; OMG-032; OMG-052; OMG-068; OMG-100; OMG-140**

Issued at **Hamburg** on **2026-07-08**

This Certificate is valid until **2031-07-07**.
DNV local unit: **Augsburg**

Approval Engineer: **Ana Cristina Do Carmo Insfran**

for **DNV**

Digitally Signed By:
Peter von Allwörden
Location: DNV Hamburg, Germany

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

The KRAL universal flowmeters OMG type may be used for versatile flow measurement of liquids, lubricative fluids and non abrasive and non corrosive media.

The Kral volume flow meters are designed and fabricated in different sizes.

The OMG flow meter design provides a volume flow measurement done by two geared screw spindles integrated in a compact housing. Each full rotation of the two geared screw spindles causes an amount of liquid flow volume to be measured in a unique integrated flow chamber of the OMG housing. An electronic sensor converts the specific measured flow chamber volume to an electronic signal corresponding to an industrial standard.

Application/Limitation

OMG universal flow meters to be used e.g. for the following applications:

- Shipping, machinery mechanical engineering, process plants
- Fuel oil measurement, e.g.HFO, MDO, MGO Hydraulic fluid, lubrication oil
- Flow rate 0,1 to 5.000 litres /minute; maximum 7.500 litres/minute
- Maximum operating pressure: 250 bar
- Operating temperature range: -20°C to 200°C
- Viscosity range 1 to $1*10^6$ mm^2/s
- Precision: ± 0,1% of measured flow measurement value

Type Approval documentation

Renewal TAP00000D4 - Rev. 6
Type Approval Assessment report dated 2026-07-01
Calibration Certificate – Serial F1343V
Works calibration certificate – Serial no.: 305318
Incoming calibration: 26W02087; 26K00046

Type approval application dated 2021-02-18
Type approval assessment report dated 2021- 05-18
Design drawings:
OMG-013; OMG-020; OMG-032; OMG-052; OMG-068; OMG-100; OMG-140
Parts Lists with material specifications
Operating instructions No.: OIO 14en-GB Edition 2020-01
Inspection certificate acc. to DIN EN 10204 dated 2020-06-24
ISO 9001:2015 Certifícate no: 20100183004915, 20100183004916, 20100183004917 valid until 2022-11-19
Data sheets of electrical sensors
Test documentation
Calibration protocol – Werknummer: 558397 dated on 2021-05-18
Work calibration certificate No.: BKD012404 dated 2021-04-12

Tests carried out

- The OMG flow meters have been tested and calibrated in presence of a DNV Surveyor
- Standard test of volume flow meter performed on KRALMaster test facility VPP08
- Flow rate measurement carried out with test fluid Exxsol D120 at a test temperature between 20 °C and 30 °C at a viscosity range between 5,29 and 4,11 mm^2/s
- The following technical parameters and units apply: Flow rate (Q - l/min); temperature (T - °C), viscosity (v - mm^2/s); max. pressure (p - bar); test pressure (pp - bar), measured volume (V - l), Puls (P), K-Factor (P/l); measurement error (% of measured value). The K-Factor adjusts any uncertainty of volume flow measurement of OMG type to be tested compared to a reference volume flow meter corresponding to the same OMG type size and calibrated at an independent test institute
- Calibration of flow rate can be carried out acc. to ISO / IEC 17025.
- The calibration of volume flow meters are to be performed and controlled within two linearity classes.

All flow meters for calibration have to comply as minimum with Linearity class II.

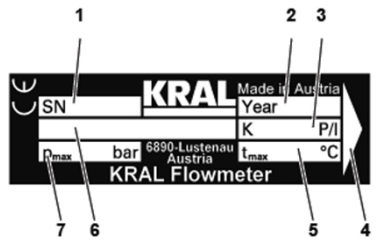
The following table shows an overview about optional flow ranges available for OMG size 13 to OMG size 140 within linearity class I and linearity class II.

	Linearity class I			Linearity class II		
Size	**Flow range [l/min]**		**max. allows linearity [%]**	**Flow range [l/min]**		**max. allows linearity [%]**
	from	**to**		**from**	**to**	
OM 13	0,2 1,0	10,0 10,0	± 2,0 ± 0,6	0,4 1,0	10,0 10,0	± 2,0 ± 2,0
OM 20	0,6 3,0	30,0 30,0	± 1,0 ± 0,3	1,2 3,0	30,0 30,0	± 2,0 ± 2,0
OM 32	2,0 10,0	100,0 100,0	± 1,0 ± 0,3	4,0 10,0	100,0 100,0	± 2,0 ± 2,0
OM 52	7,0 35,0	350,0 350,0	± 1,0 ± 0,3	14,0 35,0	350,0 350,0	± 2,0 ± 1,0
OM 68	14,0 70,0	700,0 700,0	± 1,0 ± 0,3	28,0 70,0	700,0 700,0	± 2,0 ± 1,0
OM100	40,0 200,0	2000,0 2000,0	± 1,0 ± 0,3	80,0 200,0	2000,0 2000,0	± 2,0 ± 1,0
OM140	100,0 500,0	2250,0 2250,0	± 1,0 ± 0,3	200,0 500,0	2250,0 2250,0	± 2,0 ± 1,0

Marking of product

Each OMG flow meter is labelled with a KRAL rating plate showing a specific KRAL manufacturer's type code. The OMG type code consists of the specific OMG size which corresponds to the diameter of the measurement screw spindle. Further labelling comprises numbers for KRAL's internal version indexes, end connection and code for electronic signal.

For traceability to this type approval each Flowmeter is to be marked with:



1 - Serial number
2 - Construction year
3 - K-factor
4 - Preferred flow direction
5 - Max. temperature
6 - Series
7 - Max. pressure

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment as per DNV-CP-0338, Sec.4 to verify that the conditions for the Type Approval are complied with.

To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com

END OF CERTIFICATE